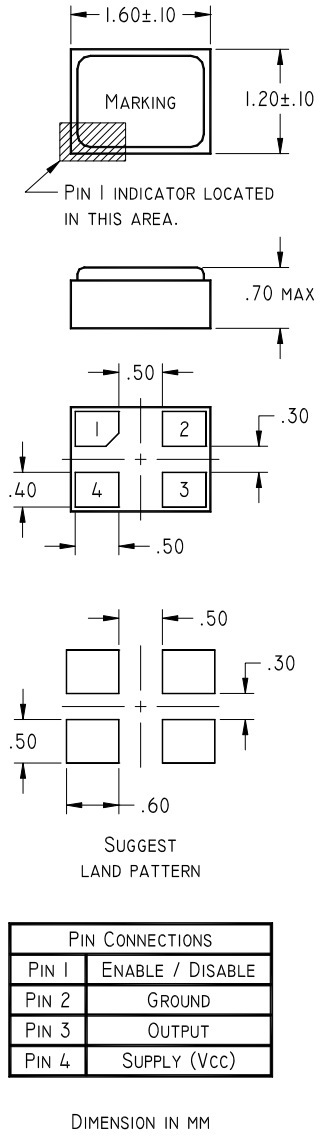
# 1.6 mm x 1.2 mm Ceramic Package SMD Oscillator, CMOS

## ISM37 Series

**Product Features:**
- Very Low Current Consumption
- CMOS Logic Levels
- Compatible with Leadfree Processing
- Extremely Small Footprint Package
- AT Cut Temperature Stability Characteristics

**Applications:**
- Real Time Clocks
- Metering
- Industrial Control
- Time Reference
- System Clock

| | |
|---|---|
| **Frequency** | 32.768 kHz |
| **Output Level** CMOS | '0' = 0.1 Vcc Max., '1' = 0.9 Vcc Min. |
| **Duty Cycle** | 50% ±5% |
| **Rise / Fall Time** | 50 nSec Max. 1.8V (20% to 80% Vcc Levels)<br>40 nSec Max. 2.5V (20% to 80% Vcc Levels)<br>30 nSec Max. 3.3V (20% to 80% Vcc Levels) |
| **Output Load** | 15pF Max |
| **Frequency Tolerance (at +25°C)** | See Part Number Guide Below |
| **Frequency Stability** | See Part Number Guide Below |
| Enable / Disable Time | 200 nSec Max |
| **Start Up Time** | 7.0 mSec Max. (Vcc = 3.3V)<br>10.0 mSec Max. (Vcc = 1.8V) |
| **Supply Voltage (Vcc)** | See Input Voltage Table, tolerance ±10% |
| **Current Operating** | 40 µA Max. (F=32.768kHz, Vcc = 3.3V, 15 pF load) |
| **Current Standby** | 3 µA Max |
| **Stand-by Function** | Output Enable (High) = 0.7 Vcc Min,<br>Output Disable (Low/High Impedance) = 0.3 Vcc Max. |
| **Operating** | See Operating Temperature Table in Part Number Guide |
| **Storage** | -40° C to +105° C Standard |




| PIN CONNECTIONS | |
|---|---|
| PIN 1 | ENABLE / DISABLE |
| PIN 2 | GROUND |
| PIN 3 | OUTPUT |
| PIN 4 | SUPPLY (VCC) |

DIMENSION IN MM

**Part Number Guide** **Sample Part Number: ISM37 -32ZBH – 32.768 kHz**

| Package | Input Voltage | Operating Temperature | Frequency Tolerance 25°C (in ppm) | Stability (in ppm) | Enable / Disable | Frequency |
|---|---|---|---|---|---|---|
| ISM37 - | 3 = 3.3 V | 1 = 0° C to +70° C | D= ±15 | D= ±15* | H = Stand-by | - 32.768 kHz |
| | 6 = 2.5 V | 3 = -20° C to +70° C | F= ±20 | F= ±20* | | |
| | 1 = 1.8 V | 5 = -30° C to +85° C | Z = ±30 | Z = ±30* | | |
| | | 2 = -40° C to +85° C | B = ±50 | B = ±50 | | |

NOTE: A 0.01 µF bypass capacitor is recommended between Vdd (pin 4) and GND (pin 2) to minimize power supply noise. * Not available at all operating temperature options.

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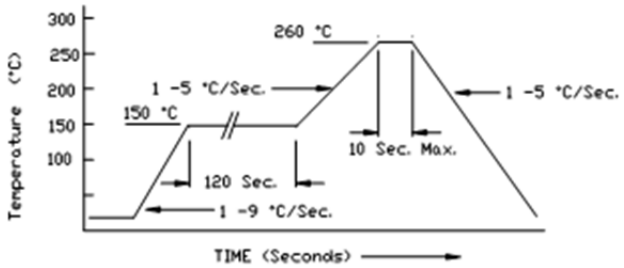
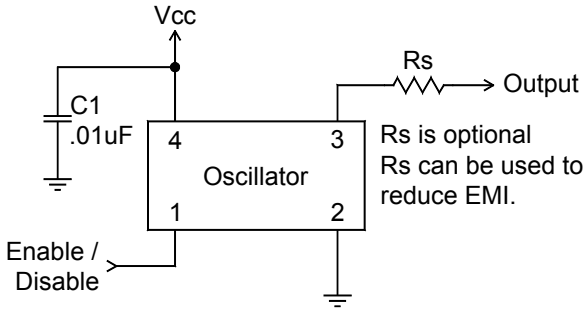
## Pb Free Solder Reflow Profile




## Typical Application:

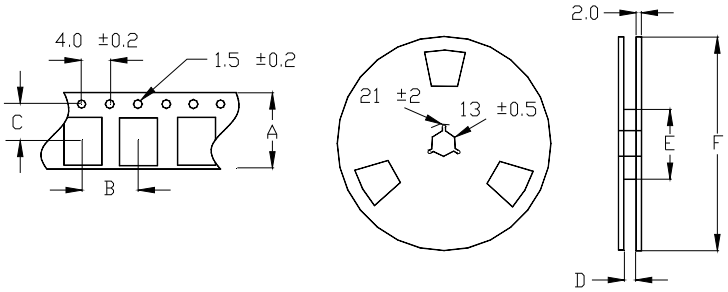



Units are backward compatible with 240C reflow processes

## Package Information:

MSL = N.A. (package does not contain plastic, storage life is unlimited under normal room conditions).
Termination = e4 (Au over Ni over W base metallization).

## Tape and Reel Information:




| Quantity per Reel | 3000 |
|---|---|
| A | 8.0+/-.3 |
| B | 4.0 +/-.2 |
| C | 3.5 +/-.2 |
| D | 16.5 +/-2 |
| E | 50 / 60 / 80 |
| F | 180 |

## Environmental Specifications

| | |
|---|---|
| Thermal Shock | MIL-STD-883, Method 1011, Condition A |
| Moisture Resistance | MIL-STD-883, Method 1004 |
| Mechanical Shock | MIL-STD-883, Method 2002, Condition B |
| Mechanical Vibration | MIL-STD-883, Method 2007, Condition A |
| Resistance to Soldering Heat | J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max) |
| Hazardous Substance | Pb-Free / RoHS / Green Compliant |
| Solderability | JESD22-B102-D Method 2 (Preconditioning E) |
| Gross Leak | MIL-STD-883, Method 1014, Condition C |
| Fine Leak | MIL-STD-883, Method 1014, Condition A2, R1=2x10-8 atm cc/s |
| Solvent Resistance | MIL-STD-202, Method 215 |

## Marking

Line 1: I-Date Code (YWW
Line 2: Frequency